CLAIMS

- 1. A method of making an aperture in a polymer comprising:
 - a) coating a mastermold with a curable polymer;
 - b) flowing air through an aperture of about 0.1 to 10 micron in the mastermold; and
 - c) curing the polymer on the coated mastermold to form an aperture in the polymer.
- 2. The method of claim 1, further comprising peeling the polymer from the mastermold.
- 3. The method of claim 1, wherein the polymer is cured by heating.
- 4. The method of claim 1, wherein the curable polymer is a silicone polymer.
- 5. The method of claim 4, wherein the silicone polymer is PDMS.
- 6. The method of claim 1, wherein the aperture is about 1-2 micron.
- 7. A method of making an electrode comprising:
- a) coating a support structure with freshly prepared polymer and placing the support structure on a mastermold;
- b) flowing air through an aperture of about 0.1 to 10 micron in the mastermold to form a hole in the freshly prepared polymer layer; and
 - c) curing the polymer to form an electrode.
- 8. The method of claim 7, further comprising peeling off the polymer from the mastermold.
- 9. The method of claim 7, wherein the polymer is cured by heating the mastermold.
- 10. The method of claim 7, wherein the polymer is a silicone polymer.

- 11. The method of claim 10, wherein the silicone polymer is PDMS.
- 12. The method of claim 7, wherein the electrode is a planar patch electrode.
- 13. An electrode obtained by the method of claim 7.
- 14. An electrode of claim 7 comprising:
 - a) a silicone polymer molded so as to form a partition comprising an aperture, said apertured-partition capable of forming a high resistance seal of at least $100 \text{ M}\Omega$ with a biological membrane; and
 - a backplate associated with the apertured-partition, said backplate comprising an electrically conductive contact, wherein the association of the apertured-partition and the backplate forms a compartment associated with the aperture, and wherein the said compartment contains the electrically conductive contact.
- 15. An electrode of claim 14, further comprising walls associated with the electrode so as to form a chamber.